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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,780	02/25/2002	Christopher Andrew Hinsley	4362-4002	1272

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MORGAN & FINNEGAN, L.L.P.
3 WORLD FINANCIAL CENTER
NEW YORK, NY 10281-2101

EXAMINER

VO, TED T

ART UNIT	PAPER NUMBER
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2191

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/084,780

Applicant(s)

HINSLEY ET AL.

Examiner

Ted T. Vo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the amendment filed on 09/02/2005.
Claims 1-30 are pending in the application.

Response to Arguments

2. Applicant's arguments in the remarks filed on 09/02/2005 have been fully considered.
Particularly, Applicants argue, "non of these passages refers to a virtual processor or its instruction set" (Remarks p. 9).

Examiner responds: the argued terms "virtual processor code" and "virtual processor" are only intended to a particular code and a particular translator. There are no recitations that make the features related in these claimed terminologies to be different from any code or translators. The control functions in the claims do exactly what a virtual machine or a compiler shown as in Miller does. Actually, the "virtual processor code" is only mere intermediate code, and this code is translated into native code (as recited in the manners in Claim 1). In the claims, the functionality acts merely like a translator that translates a type of intermediate code into machine code. Therefore, Applicants' argument as above is only on the terminological terms.

Thus, the recitation in the claims is particularly for transmitting a code (claims: VP code) and translating the code into native code.

(a) It should be noted that a program byte code is just a mere code like any source code; any source code that cannot be executed by a particular processor requires compiling or translating; when compiled it is first translated into an independent type, 'intermediate representation'; this is type of code will be translated into executable code/machine code of a particular processor.

(b) It should be noted that at the time of the filing application, transmitting any type of code via a network is common.

(c) It should be noted that at the time of the filing application, translating code into a machine code (native code) of a particular processor is common.

Applicants also do not discuss the novelty of the claims as required under 1.111(c) or MPEP 714.04. The Applicants' claims are broad and fail to include intermediate steps in order to show what they are patentable distinct from common matters as noted in (a), (b) and (c) above.

Regarding limitation "native code which uses an instruction set of a physical processor"; it should be noted that the native code uses instruction set of its physical processor.

Regarding limitation "being a machine-independent representation of an object program using an instruction set of a virtual processor"; it should be noted that "bytecode" is also a machine-independent representation of a virtual "machine". Many definitions include a virtual "machine" as a virtual processor. Moreover, intermediate representation is understandable by a particularly backend compiler, therefore, any intermediate representation (particularly for a class) uses instruction set of that backend compiler. Furthermore, Applicants' amendment necessitated a new ground of rejection presenting in this action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). The arguments to the amended claims are moot in view of the new ground of rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2-18, 20-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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As per Claims 2-12, 16, 26-29, each preamble of Claims 2-12, 16, 26-29 recites "A method". These the claims cause they are independent from the Claim 1. However, the phase followed after "A method" shows it is the element/function drawn from the method of Claim 1. This type of dependency (Claims 2-14) is improper and thus indefinite. Amending "The method" is required.

As per Claims 20-25, each preamble of Claims 20-25 recites "A distributed system". This type of dependency is improper and thus indefinite. See rationale above.

As per Claim {13-14,17}, 15, 18, and 30: Claims {13-14,17}, 15, 18, and 30 are clearly indefinite because it does not know whether these claims are recited in an independent form or the dependent claims. Each of the Claims recites "a method" or "A computer system"? What is this method or this system? Each of the Claims recites "in anyone of the preceding claims". What is preceding claims?

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 19-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Miller et al, U.S. Patent No. 6,389,590.

As per claim 19: Miller et al discloses a distributed computer system (col. 4 lines 32-37) comprising a server including a store for storing virtual processor code, said code being a machine-independent

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representation of an object oriented computer program using an instruction set of a virtual processor (col. 4 lines 32-37, col. 1 lines 10-15, col. 1 lines 15-20, col. 6 lines 1-10);

a plurality of remote client devices in communication with the server, each client device including a client processor, a native translator arranged to translate the virtual processor code into native code which uses the instruction set of the respective client processor, and a native code store; the system including transmission means for transmitting the virtual processor code from the server to the client devices (col. 4 lines 32-37, col. 1 lines 15-20, col. 6 lines 1-10 and Fig. 2).

As per claim 20, Miller further discloses distributed computer system as claimed in claim 19 in which the transmission means consists of or includes a wireless network (col. 5 lines 3045).

As per claim 21, Miller further discloses distributed computer system as claimed in claim 20 in which the client devices are mobile phones (col. 4 lines 26-32).

As per claim 22, Miller further discloses a distributed computer system as claimed in claim 20 in which the client devices are hand-held computers (col. 4 lines 26-32).

As per claim 23, Miller further discloses a distributed computer system as claimed in claim 19 in which the client devices are hand-held games consoles (col. 4 lines 26-32).

As per claim 24, Miller further discloses a distributed computer system as claimed in claim 19 in which at least one of the client devices includes a first type of client processor and in which at least another of the client devices includes a second type of client processor, using a different instruction set from that of the first type (col. 1 lines 10-20, col. 6 lines 1-10 and Fig. 2).

As per claim 25, Miller further discloses which the server is further arranged to translate the object-oriented computer program from bytecode into virtual processor code (col. 1 lines 1020, col. 6 lines 1-10 and Fig. 2).

7. Claims 19-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Kazi et al, "Techniques for Obtaining High Performance in Java Program", 7-1999.

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As per claim 19: Kazi discloses *A distributed computer system comprising a server including a store for storing virtual processor code, said code being a machine-independent representation of an object oriented computer program using an instruction set of a virtual processor* (See Figure 2, p. 7: either Byte code "machine-independent representation of an object oriented " or IL code); *and a plurality of remote client devices* (See Figure 2, target processor: note the Figure shows generally a source to an arbitrary target) *in communication with the server, each client device including a client processor, a native translator arranged to translate the virtual processor code into native code which uses the instruction set of the respective client processor* (See Figure 2, any of Interpreter, JIT compiler, Direct Compiler, or Bytecode Translator), *and a native code store* (See Figure 2, Native Machine Code); *the system including transmission means for transmitting the virtual processor code from the server to the client devices* (The connection medium between the Java Source Code/Bytecode Translator and Target processor).

As per claim 20: Kazi discloses *A distributed computer system as claimed in claim 19 in which the transmission means consists of or includes a wireless network* (The connection medium between the Java Source Code/Bytecode Translator and Target processor).

As per claim 21: Kazi discloses *A distributed computer system as claimed in claim 20 in which the client devices are mobile phones* (See Figure 2: Target Processor).

As per claim 22: Kazi discloses *A distributed computer system as claimed in claim 20 in which the client devices are hand-held computers* (See Figure 2: Target Processor).

As per claim 23: Kazi discloses *A distributed computer system as claimed in claim 19 in which the client devices are hand-held games consoles* (See Figure 2: Target Processor).

As per claim 24: Kazi discloses *A distributed computer system as claimed in claim 19 in which at least one of the client devices includes a first type of client processor and in which at least another of the client devices includes a second type of client processor, using a different instruction set from that of the first type* (See Target Processor: a generic processor in an arbitrary device, see either bytecode transmitted into an interpreter of the target processor or IL of Bytecode Translator that is independent-platform code).

As per claim 25: Kazi discloses *A distributed computer system as claimed in any one of claims 19 in which the server is further arranged to translate the object-oriented computer program from bytecode into virtual processor code. (See Figure 2, either Bytecode: virtual processor code, or the Bytecode Translator computer that generates IL: virtual processor code).*

8. Claims 19-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Koizumi et al, U.S. Patent No. 5,586,323.

As per claim 19: *A distributed computer system comprising a server including a store for storing virtual processor code, said code being a machine-independent representation of an object oriented computer program using an instruction set of a virtual processor (See col. 4:40-45 'single abstract object program', and the computer system that generates this program: server), and a plurality of remote client devices in communication with the server, each client device including a client processor, a native translator arranged to translate the virtual processor code into native code which uses the instruction set of the respective client processor, and a native code store (See col. 4:46-50 "an installer" that resides in Machine A/Machine B, and this installer translates 'single abstract object program' into machine language of its target: Machine A or Machine B); the system including transmission means for transmitting the virtual processor code from the server to the client devices (The connection medium between the computer that generates 'single abstract object program' and Machine A/Machine B).*

As per claim 20: Koizumi discloses *A distributed computer system as claimed in claim 19 in which the transmission means consists of or includes a wireless network (The connection medium between the computer that generates 'single abstract object program' and Machine A/Machine B).*

As per claim 21: Koizumi discloses *A distributed computer system as claimed in claim 20 in which the client devices are mobile phones (See Machine A/Machine B).*

As per claim 22: Koizumi discloses *A distributed computer system as claimed in claim 20 in which the client devices are hand-held computers (See Machine A/Machine B).*

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As per claim 23: Koizumi discloses *A distributed computer system as claimed in claim 19 in which the client devices are hand-held games consoles* (See Machine A/Machine B).

As per claim 24: Koizumi discloses, *A distributed computer system as claimed in claim 19 in which at least one of the client devices includes a first type of client processor and in which at least another of the client devices includes a second type of client processor, using a different instruction set from that of the first type* (See Machine A and Machine B where A and B are different platform and 'single abstract object program' is independent platform code).

As per claim 25: Koizumi discloses *A distributed computer system as claimed in any one of claims 19 in which the server is further arranged to translate the object-oriented computer program from bytecode into virtual processor code*. (See FIG 2, the computer generates intermediate language from a source file into 'single abstract object program': *virtual processor code*).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A person shall be entitled to a patent unless –

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-5, 12-18, 26-30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kazi et al, "Techniques for Obtaining High Performance in Java Program".

Given the broadest reasonable interpretation of followed claims in light of the specification.

As per Claim 1: Kazi discloses:

A method of translating an object-oriented computer program comprising:

(a) translating the program bytecode into machine independent virtual processor code which uses an instruction set of a virtual processor (See Byte code Translator, Figure 2, p. 7);

(b) transmitting the virtual processor code from a server to a client device: and

(c) translating the virtual processor code into native code which uses an instruction set of a physical processor of the client device (See Native Machine code, Figure 2).

Kazi does not explicitly address “(b) transmitting the virtual processor code from a server to a client device”, i.e., whether IL (interpreted as *virtual processor code*) is whether sent from a server or not. Kazi simply shows the IL code is sent to a Native Machine Code. However, in the designing concept, one simply implements a down line as a connection between two elements, transmitter and receiver. The concept of transmutation data is well known as a network, where a network simply provides at least a connection between a sending data source computer device such as a server and a receiving data device such as a client device/computer.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include networking, an available source, that has been used commonly, as a means for sending independent-platform intermediate code to another backend remotely for providing targeted translation because growing of many different processor-types. Doing so would conform to the common standard of processor execution.

As per Claim 2: Kazi further discloses, *a method as claimed in claim 1 in which the program bytecode includes a class file, the class file being converted into one or more virtual processor tools which use the instruction set of the virtual processor. See .class file in the figure 2, and translator in Figure 2.*

As per Claim 3: Kazi further discloses: *A method as claimed in claim 2 in which the class file includes a plurality of methods, and which some or all the methods in the class file are converted to a respective virtual processor tool. See .class file in Figure 2, because class file includes a plurality of methods.*

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As per Claim 4: Kazi further discloses: *A method as claimed in claim 2 in which the class file includes a call to a method, and in which the virtual processor code provides a call to a corresponding tool.*

See .class file in Figure 2, because class file includes a plurality of methods, and a method is a call.

As per Claim 5: Kazi further discloses: *A method as claimed in claim 2 in which the class file includes a reference to a field, and in which the virtual processor code provides a fixup tool for use in locating the field.* See .class file in Figure 2, because class file preprogram per se and it includes code/field, method, method can do any desired function.

As per claim 12: Kazi further discloses which the bytecode is stack-based, and in which the virtual processor code is register-based (It is known that bytecode stack-based, and intermediate representation that is used to translated into executable code is register-based).

As per claim 16: Regarding, *A method as claimed in any one of claims 1 which includes:*

(d) transmitting the virtual processor code from a server to a second client device; and

(e) translating the virtual processor code into a different native code which uses an instruction set of a second physical processor of the second client device.

(See Figure 2, and same rationale addressed in As per Claim 1).

As per claim 18: Kazi further discloses *A computer system adapted to carry out a method as claimed in claim 16.* (See Figure 2, and same rationale addressed in As per Claim 1).

As per claim 26: Further in view of 2, Kazi further discloses *A method as claimed in any one of claim 2, including verifying the integrity of the class bytecode, and of any external calls,* because it also include "Java Virtual Machine", that has the feature of this claim.

As per claim 27: Further in view of 2, Kazi further discloses *A method as claimed in any one of claim 2 in which the class file is a Java class file* (See Figure 2).

As per claim 28: Further in view of 2, Kazi further discloses *A method as claimed in any one of claim 2 in which the step of translating the program bytecode into virtual processor code is carried out by a first translator program which is itself written in virtual processor code.* (See Figure 2: Bytecode Translator).

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As per claim 29: Further in view of 1, Kazi further discloses *A method as claimed in any one claim 1, in which the step of translating the virtual processor code into native code is carried out by a second translator program which is itself written in virtual processor code.* (See Figure 2: IL Compiler).

As per claim 30: As noted that claim 30 is indefinite as addressed above, Examiner interprets Claim 30 having the same functionality of Claim 1. See rationale addressed in Claim 1.

As per claim 13: Kazi discloses *A method of executing an object oriented computer program comprising translating the program into native code as claimed in any one of the preceding claims, and executing the native code on the physical processor* (See Figure 2).

As per claim 14: As noted that *"the translated tools"* is indefinite as addressed in 37 USC 112 second paragraph, Kazi discloses a translator that has means, *including binding the translated tools into a task, and executing the task in native code on the physical processor.*

As per claim 17: Kazi discloses *A method as claimed in claim 13 including executing the different native code on the physical processors of different client devices* (See Figure 2, Target processor: it should be noted that each target processor represents to a client.

As per claim 15: As noted that claim 15 is indefinite as addressed in 37 USC 112 second paragraph, Examiner interprets Claim 12 a system of Claim 1.
See rationale address in Claim 1 above.

11. Claims 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazi et al, "Techniques for Obtaining High Performance in Java Program", in further view of Miller et al, U.S. Patent No. 6,389,590.

With regards to Claims 6-8, 10:

As per claim 6, Kazi et al does not explicitly address claim 6. In further view of Miller et al, it discloses which the fixup tool is arranged to return a constant fixup value which is representative of the offset of the said field within an object (col. 7 lines 20-30, col. 7 lines 37-46).

As per claim 7, Kazi et al does not explicitly address claim 7. In further view of Miller et al, it discloses linking the virtual processor code and determining the constant fixup value in dependence upon virtual processor code which has been translated from another class file (col. 6 lines 30-36, col. 7 lines 20-46).

As per claim 8, Kazi et al does not explicitly address claim 8. In further view of Miller et al, it discloses which the fixup tool returns a value which is used to patch a method which gets or puts the value of a field (col. 6 lines 30-36, col. 7 lines 20-46).

As per claim 10, Kazi et al does not explicitly address claim 10. In further view of Miller et al, it discloses which the fixup instructions provide instructions as to how the native code can reference another class, or a field or method in another class (Fig. 3, col. 7 lines 21-45 and col. 8 lines 3-11).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include fixup as disclosed by Miller into a code translation at back end as disclosed by Kazi just because every translator requires to accurately translate code.

With regards to Claims 9, 11:

As per claim 9, Kazi et al does not explicitly address claim 9. In further view of Miller et al, it discloses which the virtual processor code has, included within it at a plurality of points, fixup instructions which indicate that the code at the said points has to be modified by the respective fixup instruction prior to use (Fig. 3, col. 7 lines 21-45 and col. 8 lines 3-11).

As per claim 11, Kazi et al does not explicitly address claim 11. In further view of Miller et al, it discloses which the fixup instructions are transferred, functionally unaltered, by the native translator into the native code (col. 1 lines 15-20, col. 6 lines 1-10 and Fig. 2); the fixup instructions being replaced with native instructions when the native code is bound on the said real physical processor (col. 1 lines 15-20, col. 6 lines 1-10 and Fig. 2).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include fixup as disclosed by Miller into a code translation at back end as disclosed by Kazi just because every translator requires to accurately translate code.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ebcioğlu et al., "A JAVA ILP Based on Fast Dynamic Compilation", CiteSeer, IBM T.J Watson Research Center, NY, pages: 1-13, 1997.

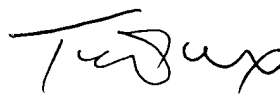
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted T. Vo whose telephone number is (571) 272-3706. The examiner can normally be reached on 8:00AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Y. Zhen can be reached on (571) 272-3708.

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The facsimile number for the organization where this application or proceeding is assigned is the Central Facsimile number **571-273-8300**.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ted T. Vo
Primary Examiner
Art Unit 2191
November 9, 2005